DOCUMENT RESUME

ED 478 290 FL 027 742

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TITLE	Utilizing Two-Way Bilingual Education for Reducing the Achievement Lag of LEP Students in Primary Grades: A Longitudinal Study.
PUB DATE	2003-04-22
NOTE	9p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, April 21-25, 2003).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Academic Achievement; *Bilingual Education Programs; Elementary Education; English (Second Language); High Risk Students; *Limited English Speaking; Literacy; Longitudinal Studies; Second Language Learning; Spanish; *Two Way Immersion Programs
IDENTIFIERS	*Achievement Gap

ABSTRACT

This study investigated the effect of a bilingual education program on the achievement gap in language development between at-risk kindergarten students with minimal English proficiency and students who were proficient English speakers. Limited English Proficient (LEP) students were included in an Extended Foreign Language (EFL) program designed to develop and maintain students' language and literacy skills in two languages: English and Spanish. Participating students were identified as at-risk because they performed at significantly lower levels than students in the comparison group. Participants received instruction in English 70 percent of the time and Spanish 30 percent of the time. These students' academic performance was compared to that of a group of LEP and non-LEP students who attended the same school but did not participate in the EFL program. Progress was tracked for 2 years. Data from students' pretest-posttest scores indicated that at-risk students participating in the EFL program made adequate academic progress during the 2 years of the study. By the end of the second year, there were no statistically significant differences between the at-risk and the comparison groups in any of the seven indicators of verbal and academic development or in the standardized achievement test Scholastic Reading Inventory. (Contains 15 references.) (SM)

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Utilizing Two-Way Bilingual Education for Reducing the Achievement Lag of LEP Students in Primary Grades: A Longitudinal Study

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Paper presented at the Annual Meeting of the

American Educational Research Association

Chicago, Illinois

April 22, 2003

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Purpose

The purpose of this study was to investigate the effect of a two-way bilingual education program on the achievement gap in language development between at-risk kindergarten students who had minimal English proficiency and students who were proficient speakers. To achieve this goal, Limited English Proficient (LEP) students were included in an Extended Foreign Language (EFL) program that sought to develop and maintain the students' language and literacy skills in two languages: English and Spanish. The students participating were identified as "at-risk" since they performed at significantly lower levels than the students in the comparison group. In this study, the students were instructed in English approximately seventy percent of the time and in Spanish approximately thirty percent of the time. The academic performance of these students was compared to that of a group of LEP and non-LEP students who attended the same school but did not participate in the Extended Foreign Language program. Their progress was tracked for a period of two years.

Theoretical Framework

Throughout the years, diverse, and often conflicting, instructional approaches have been implemented to meet the educational needs of children from immigrant families. These have ranged from "English only" approaches that minimize the school use of the students' native language to bilingual education approaches that build on the students' linguistic backgrounds and seek to facilitate English language acquisition while maintaining and enhancing native language skills.

Differences in policy and program implementation notwithstanding, "the acquisition of English (second) language arts skills, especially reading, is a hard struggle for the majority of [limited English proficient] (LEP) students...[and they] appear to face almost insurmountable odds to succeed" (Garcia, 2000, p. 7). Other researchers (Tashakkori, Ochoa, & Kemper, 1999; Viadero, 2001) have found that the academic gap between LEP and native language speakers actually widens as these students progress through school. It has been said that Hispanic students, many of whom are classified as LEP, "are not performing at the same rate as their non-Hispanic white counter-parts[, b]ut the United States educational system has failed to provide school experiences to change the failure rate of these students" (Carrasquillo, 1999, pp. 39-40).

Bilingual education has often been purported as both a solution to, and a cause of, the problem. Variety in program implementation has caused difficulty in interpreting research results, as some studies do not adequately describe the program that they are investigating (Porter, 1997, p. 39), thus obscuring the relevance of findings that could benefit "at-risk" LEP students.

Nonetheless, Cummins' interdependence hypothesis (1993) suggests that there is a transfer of knowledge, skills, and processes across languages, and that the development of literacy skills in the first language facilitates the acquisition of skills in a second language. Indeed, several researchers (Collier, 1992; Thomas & Collier, 1997; Ramírez, 1992) have concluded that bilingual education programs that capitalize on this interdependence and provide "LEP students with substantial instruction in their primary language [do] not interfere with or delay their acquisition of English language skills, but [help] them 'catch-up' to their English-speaking peers in English language arts, reading, and math" (Ramírez, 1992, p. 1).

Data Sources

Site. The study was conducted in an elementary school, in a predominately Spanish-speaking school district in the South. Immigration has a great impact on the school district, as a considerable proportion of its students come from immigrant families. The school represents this. Approximately 34% of the school population receives English as a Second Language (ESOL) instruction, and 90% are native Spanish-speakers. The socioeconomic background of the school population is diverse, as 56% of all students receive free or reduced lunch.

Participants. During the first year of the study, the participants were 87 students (43 males and 44 females) enrolled in kindergarten. The students participating in the study were those classified as ESOL level 3, 4, or 5, as well as students classified as non-ESOL. Students classified as ESOL level 3 and 4 receive, as part of their Language Arts program, special instruction in ESOL. Students in Level 5 no longer participate in ESOL, but their academic performance is monitored for a period of two years once they exit the program. Students classified as "Gifted" or "Learning Disabled" were excluded from the analyses, as they did not participate fully in the EFL or regular programs but were "pulled-out" to receive special instruction during part of the day. Additionally, only those students who were in the school during both years of the study were considered in the analysis. Due to mobility and other factors, 66 of the 87 original participants remained in the first grade class.

Table 1 presents demographic and language proficiency of the two groups at the onset of the study. The data indicate that there were pre-existing differences between the experimental and control groups in terms of language proficiency. There were more LEP students in the EFL group. Almost two-thirds (73%) of the students in the treatment group at the kindergarten level were classified as ESOL, as opposed to only 12% in the comparison group.

Furthermore, as shown on Table 1, in kindergarten, the treatment group included a greater percentage of children on free/reduced lunch (55% compared to 45%), which has been shown to be a reliable indicator of SES, as well as a good predictor of achievement. Given all of this, the treatment group was clearly at a disadvantage. Therefore one indicator of program success should be a narrowing of the learning gap.

Table 1
Demographic characteristics of the experimental and comparison groups

Demographic and Other Characteristics	Treatment Group		Comparison Group	
	n	%	n	%
Gender				
Male	17	52	19	58
Female	16	48	14	42
Lunch Status				
Free/Reduced	18	55	16	48
Full Price	15	45	17	52
Language Proficiency				
ESOL	24	73	4	12
Non-ESOL	9	27	29	88
Total	33	100	33	100

Instruments. Two sets of instruments were utilized for measuring the students' literacy development in the two different treatments, or programs (i.e. EFL and "regular"). One set measured the literacy growth of kindergarten students (year 1), and the other measured the literacy development of first grade students (year 2). These assessments, which were used to measure literacy in English, had been developed by the school district and were widely utilized to measure the literacy goals and objectives delineated in the district's Language Arts curriculum. All assessments, except the Scholastic Reading Inventory, were administered at the beginning and at the end of the school year.

Procedure

The study used a two-group longitudinal design. The students participating in EFL in kindergarten made up the first group, while students not in the EFL program made up the second group. Assignment of students to the experimental and control groups was voluntary, as the parents choose the academic program in which their children enroll (i.e. two-way bilingual or regular). Parents of at-risk students (those with low English proficiency) were actively recruited to enroll their children in the EFL group. Only the students who remained in their original (treatment or control) groups throughout the two years were retained for the current report.

During each of the two years of the study, the students participating in the EFL program received two hours of English language arts, half an hour of social studies in English, one hour of mathematics in English, an hour of Spanish language arts, and half an hour of science in Spanish. Students in the comparison group received all instruction in English, except for a weekly average of two and a half hours of Spanish language arts.

Once the groups were formed, the aforementioned pretests were administered at the beginning of the kindergarten. Daily instruction was based on the goals and objectives of the district's curriculum, as well as the benchmarks provided by the State Standards. As the teachers worked in collaborative teams, the only difference in the curriculum imparted was the amount of time allowed for instruction in English and Spanish. At the end of kindergarten, the first set of post-tests was administered. Two new follow-up sets of tests were administered at the beginning and at the end of first grade.

Results and Discussion

As was previously discussed, a pretest-posttest control group design was used for this study. Since parents had the choice of selecting the type of program for their children, the assignment of children to the experimental and control groups was not random. As was evident in Table 1, there were differences between the treatment and comparison groups in terms of the proportion of students participating in ESOL and also those who received free/reduced lunch.

Program Effects at Kindergarten Level (Year 1)

Pretest Scores: Table 2 presents the pretest and post-test scores of the treatment and comparison groups of kindergarten children. As can be expected, at the beginning of the kindergarten year, there were differences between the average pretest scores of the two groups. A 2x2 multivariate analysis of variance (MANOVA) with two factors (treatment group and SES level) and three dependent variables (alphabet

knowledge, sight word mastery and writing skill) indicated significant differences between the pretest scores of the experimental and comparison groups ($F(3, 60) = 44.413$, $p < 0.01$). These initial differences were expected, and pointed to the fact that the experimental group had a greater need for the special program. Indeed, research indicates that students entering kindergarten with developed phonemic awareness skills demonstrate significantly higher reading knowledge skills in subsequent school years (National Center for Education Statistics, 2002), thus suggesting the special need of the experimental group that entered kindergarten at a disadvantage. Main effect of SES (Free/reduced lunch vs. full-price lunch) on the combination of dependent variables was significant ($F(3, 60) = 3.918$, $p = 0.013$); however, the interaction of group and SES was not significant ($F(3, 60) = 0.543$, $p = 0.655$).

Posttest Scores: The post-test scores of the kindergarten children are also reported in Table 2. Multivariate analysis of variance with the three post-test scores as dependent variables revealed a main effect of group ($F(3, 60) = 7.636$, $p < 0.01$). At the end of first grade, the experimental group was slightly ahead of the comparison group in writing. However, there was still a gap in Alphabet Knowledge and Sight Words. The biggest area of lag was in Alphabet ($F(1, 62) = 8.481$, $p < 0.01$).

Table 2
Mean and the standard deviation of the pretest and post-test scores of the treatment and comparison groups during the first year of the study (Kindergarten)

	Treatment Group		Comparison Group		EFL Main Effect
Measures	Mean	SD	Mean	SD	F (1, 62)
Pretest Scores					
Alphabet	40.79	33.00	43.61	32.81	0.040
Sight Words	5.24	10.07	6.79	9.09	0.376
Writing	1.00	0.00	3.03	1.07	114.060*
Post-Test Scores					
Alphabet	90.36	8.23	95.76	6.29	8.481*
Sight Words	67.36	71.18	90.00	62.66	1.594
Writing	5.55	0.79	5.18	1.07	2.589

*$p < 0.05$

Program Effects at First Grade Level (Year 2)

Pretest Scores: Table 3 presents the children's performance on a variety of tests in the first grade. A 2x2 multivariate analysis of variance (MANOVA) of the first follow-up scores (beginning of the first grade) with two factors (treatment group and SES level) and 6 dependent variables (alphabet knowledge, phonemic awareness, running record, sight words, narrative writing, and expository writing) indicated significant differences between the experimental and control groups ($F(6, 57) = 2.657$, $p = 0.024$). Neither the main effect of the SES, nor its interaction with the treatment was significant ($F(6, 57) = 0.668$, $p = 0.676$, and ($F(6, 57) = 0.1.679$, $p = 0.143$, respectively). Univariate tests of group differences indicated that the experimental group lagged behind the control group in nearly all significant dependent variables.

Posttest Scores. Despite these initial differences, at the end of the first grade, there were no statistically significant differences between the two groups. MANOVA on the second follow-up (end of the first grade) test scores indicated that none of the main effects (group or SES) were significant ($F(7, 54) = 1.993$ and $F(7,54) = 1.846$, $p > 0.05$ for both). The interaction effect of the two factors was also non-significant ($F(7,54) = 1.092$, $p < 0.05$). As the following table shows, the achievement gap between the at-risk and the comparison group was relatively small. Compared to the within group variation (standard deviations), the between group differences were small (and non-significant). For example, the biggest difference between the experimental and control groups continued to be in the Sight Word Recognition (means of 321.19 and 405.18, respectively). However, this difference (of 84 points) shows a small magnitude of effect (see Thompson, 1998; Tashakkori & Rupers-Huilman, 2000) when compared to the standard deviations of 129.95 and 159.58 (for the experimental and control groups, respectively).

Finally, an analysis of the means on the state-mandated Scholastic Reading Inventory (SRI) test pointed to no significant main effect of the treatment or SES factors. In other words, despite the initial gap between the at-risk (experimental) and the comparison groups, there was no gap on the standardized test performance of the two groups at the end of the first grade. Since the SRI measures the students' ability to read and comprehend a variety of text passages, it can be concluded that there were no significant differences in reading abilities between the two groups.

Table 3

Mean and the standard deviation of the pretest and post-test scores of the treatment and comparison groups during the second year of the study (First Grade)

	Treatment Group		Comparison Group		EFL Main Effect
Measures	Mean	SD	Mean	SD	F (1, 62)
Pretest Scores					
Alphabet	92.85	4.47	95.55	5.55	4.519*
Phonics	77.52	11.92	86.30	9.61	10.386*
Running Record	9.52	3.63	12.52	3.96	9.912*
Sight Words	21.30	31.18	69.06	80.23	10.272*
Narrative Writing	1.70	2.82	3.52	3.07	5.836*
Expository Writing	1.36	2.68	2.45	3.10	2.244
Post-Test Scores					
Alphabet	96.71	2.36	98.15	2.51	5.028*
Phonics	91.03	5.10	93.21	5.40	2.699
Running Record	17.00	2.48	17.64	2.74	0.793
Sight Words	321.19	129.95	405.18	159.58	5.009*
Narrative Writing	6.68	0.54	6.82	0.73	1.093
Expository Writing	6.61	1.43	6.52	1.30	0.034
SRI Percent	47.74	23.86	52.27	18.92	0.715

*$p < 0.05$

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Conclusions and Educational Implications

Analyses of the results indicate that at risk students participating in the EFL program made adequate academic progress during the two years of the study. Indeed, by the end of the second year of study, there were no statistically significant differences between the at-risk and the comparison groups in any of the seven indicators of verbal and academic development, or in the standardized achievement test SRI. The results clearly suggest that at-risk students participating in the EFL program made adequate academic progress, even though initial differences existed between the two groups. This confirms the potential usefulness of the two-way bilingual education model in reducing the achievement gap between at-risk LEP students and their peers. The model thus becomes viable in the education of language minority students.

The literature (e.g. Collier, 1992, Thomas and Collier, 1997) has pointed to substantial gaps between the achievement of LEP and non-LEP students' scholastic achievement. In the current study, such a substantial gap was not present after two years of the intervention. The results clearly suggest that students participating in the EFL program made adequate academic progress, even when initial differences existed between the two groups. This confirms the potential usefulness of the two-way bilingual education model in reducing the achievement gap between limited English proficient students and students whose English skills are more developed. As limited English proficient (LEP) children comprise an increasing proportion of the nation's multicultural classrooms, it becomes crucial for educators to become more knowledgeable about the effect of different instructional programs on the language acquisition of LEP students and to use this knowledge to further the academic development of the students.

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